

REMARKS

Claims 1-18 are all the claims pending in the application. Claims 1-9 are rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite. Claims 1-18 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Scifres et al. (U.S. Patent No. 4,656,641) (“Scifres”).

Applicant’s invention relates generally to a light source apparatus equipped with a GaN type semiconductor light emitting element, and in an embodiment, to a light source apparatus equipped with a GaN type semiconductor light emitting element that has a stray light eliminating function.

Scifres relates to a laser cavity optical system for providing beam stabilization from a phased array semiconductor laser, e.g., a multi-emitter or broad emitter semiconductor laser having a phase locked radiation pattern emitted from a common p-n planar junction.

With respect to the § 112, second paragraph rejection, the Examiner states that “‘a GaN semiconductor light emitting element’ is not a positive element in the preamble and the claim has only a single element ‘a spatial filter. . . ‘ structure, which render[s] the claim vague and indefinite.” Applicant respectfully submits that the Examiner is incorrect because “any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation.” See M.P.E.P. § 2111.02, “PREAMBLE STATEMENTS LIMITING STRUCTURE.” Furthermore, “[t]he claim preamble must be read in the context of the entire claim. The determination of whether preamble recitations are structural limitations or mere statements of purpose or use can be resolved only on review of the entirety of the record to gain

an understanding of what the inventors actually invented and intended to encompass by the claim.” See M.P.E.P. § 2111.02, “PREAMBLE STATEMENTS RECITING PURPOSE OR INTENDED USE.” Therefore, the GaN semiconductor light emitting element must be read in the context of the entire claim 1. In doing so, claim 1 and dependent claims 2-5, are definite.

As for the rejection of claims 8 and 9, Applicant submits amended claims as shown in the attached Appendix.

Turning to the prior art rejections, Applicant respectfully submits that claim 1 is patentable because the Examiner has improperly combined the disclosure of the Applicant’s Specification and Scifres. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See M.P.E.P. § 2143.01.

Here, the Examiner has not provided any valid teaching, suggestion, or motivation to combine or modify the laser taught by Scifres with the disclosed GaN type semiconductor laser. While the Specification discusses the mere possibility of using GaN type semiconductor lasers in certain applications, the Specification, however, mentions that unlike other semiconductor lasers, the use of GaN type semiconductor lasers presents problems not encountered when other semiconductor lasers such as GaAs type semiconductor lasers (page 2, line 18 - page 3, line 10, and page 4, lines 4-17). Specifically, the Specification discloses that it becomes difficult to

accurately control the quantity of the recording light due to the generation of stray light when the GaN type semiconductor lasers are driven by low level drive current.

Therefore, Applicant submits that the Applicant's Description of the Related Art teaches away from using GaN type semiconductor lasers due to the problems associated with stray light. In other words, the use of GaN type semiconductor laser would not have been an obvious design choice due to the noted problems associated with such use.

Further, claim 1 is further patentable because Scifres fails to teach, suggest, or provide motivation for all the elements of the claim. For example, the reference fails to teach, suggest, or provide motivation for a light source apparatus equipped with a GaN type semiconductor light emitting element, comprising:

a spatial filter for eliminating stray light from the light emitted from the GaN type semiconductor light emitting element, wherein

said stray light amounts to 20% or less of the total output of the light emitted from said GaN type semiconductor light emitting element when said GaN type semiconductor laser is driven at the maximum output thereof.

Although the reference discloses certain reflective and transmissive percentages of the mirror 31 (col. 3, line 67 - col. 4, line 1), Scifres makes no mention or suggestion for any semiconductor laser which emits stray light in the manner claimed. Instead, Scifres only states that a laser output beam is emitted from the phase locked laser 12 (col. 3, lines 10-53) without any mention of stray light. Compare Fig. 2 of Scifres (showing the laser output beam between the multi-emitter laser 12 and the collimating lens 28) with Fig. 10 of the Specification (showing the stray light 35 emitted from the laser 70).

Additionally, there is a difference in the fundamental structure, between the present invention and Scifres. Specifically, Scifres discloses a phased array semiconductor laser which has a multi-lobed far-field pattern. The multi-lobed far-field pattern is formed by interference between multiple laser beams emitted from multiple emitters of the phased array semiconductor laser. On the other hand, the present invention discloses in an embodiment, a single stripe GaN semiconductor light emitting element which has a single-lobed far field pattern.

Meanwhile, in Scifres, the second, less dominant lobes present in the far-field are emitted, together with the dominant lobe, in a horizontal direction parallel to the direction in which the p-n junction of the semiconductor laser device extends. In Scifres, a slit aperture is placed outside the laser cavity in order to cut off the second, less dominant lobes so that the laser oscillation is well controlled. Col. 1, line 66- col. 2, line 1. No mention is made regarding the slit aperture eliminating stray light. In contrast, stray light is not a laser emitted from the laser-emitting facet of the semiconductor element. In an embodiment of the present invention, the stray light propagates and scatters, primarily in directions that are not parallel to the direction in which the p-n junction of the semiconductor light emitting element extends, through the transparent substrate of the GaN type semiconductor element. In the embodiment, the spatial filter/polarizer of the embodiment is provided to eliminate the stray light emitted from the transparent substrate of the GaN semiconductor element.

In view of the above, not only is the recited stray light different from the second, less dominant lobes of Scifres, the claimed spatial filter is entirely different from the slit aperture disclosed by Scifres. The differences between what is recited in claim 1 and Scifres show that

Scifres is not an analogous reference because the reference is not even “reasonably pertinent to the particular problem with which the inventor was concerned.” M.P.E.P. 2141.01(a).

At least for the reasons above, claim 1 is patentable over Scifres.

Claims 2-5, 10-13, and 16-17, which depend from claim 1, are patentable for at least the reasons put forth for claim 1.

Likewise, method claims 6 and 14 are patentable because Scifres fails to teach, suggest, or provide motivation for eliminating, by use of a spatial filter, stray light from the emitted light, wherein said stray light amounts to 20% or less of the total output of the light emitted from said GaN type semiconductor light emitting element, in the manner claimed. For at least the reasons submitted for claims 6 and 14, dependent claims 7 and 15 are also patentable.

Similarly, claims 8 and 9, which depend from claim 1, are patentable for at least the reasons submitted for claim 1.

In addition, claims 8 and 9 are further patentable because the Examiner has improperly relied on a supposed inherent obviousness based on the assignee of Scifres. In the Office Action, the Examiner alleges that the combination of: i) Scifres and ii) the patent assignee being the Xerox Corporation, i.e., a manufacturer of copiers, makes claims 8 and 9 inherently obvious. Applicants respectfully submit that the Examiner’s rationale has no basis. First, the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. See M.P.E.P. § 2112 “EXAMINER MUST PROVIDE RATIONALE OR EVIDENCE TENDING TO SHOW INHERENCY.” Here, the Examiner has not provided a basis in fact and/or technical reasoning to reasonably support the

determination that the disclosed laser optical system is an image forming apparatus that scan photosensitive material with a light modulated based on image data to form the image borne by said image data, necessarily flows from the teachings of Scifres.

Claim 13 is patentable because Scifres fails to teach, suggest, or provide motivation for the slit width as claimed. To the contrary, the Examiner's assertion that "[d]iscovering the optimum or workable ranges involves only routine skill in the art," is founded on legal error because it substitutes supposed per se rules for the particularized inquiry required by section 103. It necessarily produces erroneous results." In re Ochiai, 71 F.3d 1565, 1570 (Fed. Cir. 1995) In fact, in In re Ochiai, the Court provided a detailed clarification of what it perceived to be a frequent misunderstanding among examiners.

The use of per se rules, while undoubtedly less laborious than a searching comparison of the claimed invention -- including all its limitations -- with the teachings of the prior art, flouts section 103 and the fundamental case law applying it. Per se rules that eliminate the need for fact-specific analysis of claims and prior art may be administratively convenient for PTO examiners and the Board. Indeed, they have been sanctioned by the Board as well. But reliance on per se rules of obviousness is legally incorrect and must cease. Any such administrative convenience is simply inconsistent with section 103, which, according to Graham and its progeny, entitles an applicant to issuance of an otherwise proper patent unless the PTO establishes that the invention as claimed in the application is obvious over cited prior art, based on the specific comparison of that prior art with claim limitations. We once again hold today that our precedents do not establish any per se rules of obviousness, just as those precedents themselves expressly declined to create such rules. Any conflicts as may be perceived to exist derive from an impermissible effort to extract per se rules from decisions that disavow precisely such extraction.

In re Ochiai, 71 F.3d 1565, 1572 (Fed. Cir. 1995). (Emphasis added). Applicant requests the Examiner to provide references which teach, suggest, or provide motivation for the slit width as claimed.

Moreover, claims 16, 17, and 18 are patentable because Scifres fails to teach, suggest, or provide motivation for the stray light being randomly polarized light (claims 16 and 18) or for the stray light including light that leaks from the stripe portions (claim 17), in the manner claimed. Applicant requests the Examiner to provide references which support his assertion that "light 'with relative amount of light' do bounce or crosstalk into other adjacent layers" suggests or provides motivation for the claimed stray light.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

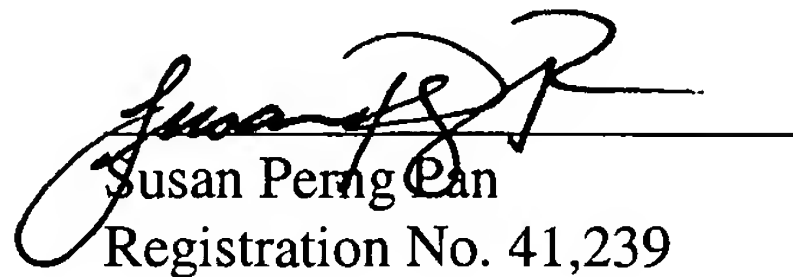
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